



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Alex S. Toback
Application No. : 09/639,599
Filed : August 16, 2000
Title : Connection System for Steel Construction

Group/A.U. : 3726
Examiner : Essama Omgba
Docket No. : TOB/102/US

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Honorable Sir:

APPEAL BRIEF

This brief contains the following sections under the headings and in the order set forth below as required by (37 C.F.R. §1.192(c)):

- I. REAL PARTY IN INTEREST
- II. RELATED APPEALS AND INTERFERENCES
- III. STATUS OF CLAIMS
- IV. STATUS OF AMENDMENTS
- V. SUMMARY OF THE INVENTION
- VI. ISSUES
- VII. GROUPING OF CLAIMS
- VIII. ARGUMENTS - REJECTIONS UNDER 35 U.S.C. §103

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IX. CONCLUSION

X. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL

The final page of Section IX bears the signature of Appellant's attorney.

I. REAL PARTY IN INTEREST (37 C.F.R. §1.192(c)(1))

The real party in interest is the inventor/applicant Alex S. Toback.

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. §1.192(c)(2))

There are no known appeals or interferences related to this application.

III. STATUS OF CLAIMS (37 C.F.R. §1.192(c)(3))

a. TOTAL NUMBER OF CLAIMS IN THIS APPLICATION

CLAIMS IN THIS APPLICATION NUMBER: 24

b. STATUS OF ALL CLAIMS

CLAIMS 1-24 ARE PENDING IN THE APPLICATION.

CLAIMS 1-24 ARE REJECTED IN THE APPLICATION.

c. CLAIMS ON APPEAL

THE CLAIMS ON APPEAL ARE CLAIMS 1-24.

IV. STATUS OF AMENDMENT (37 C.F.R. §1.192(c)(4))

Appellant has submitted no amendments subsequent to the final rejection dated December 4, 2002.

V. SUMMARY OF THE INVENTION (37 C.F.R. §1.192(c)(5))

Appellant's invention is concerned with providing a light-gauge steel connection for applications in the construction trades, such as for housing structures.

The light-gauge steel connection provided by Appellant's invention provides an enhanced load-bearing capacity through the use of both fasteners and a

structural adhesive. By using the structural adhesive, the number of required fasteners is significantly decreased while the load-bearing capacity and durability of the connection is enhanced. As illustrated in Figure 8 and set forth on page 3, second full paragraph, in one embodiment of the invention, the adhesive is applied to one or both of the steel surfaces to form beads 32 and/or 42. The panel 30 is placed in overlapping relationship against the frame 40. Self-drilling fasteners 20 are then inserted through the panels by a power driver 24 and the adhesive is compressed between the panel 30 and the members of the frame.

The fasteners may take a wide variety of forms including a self-drilling metal panel fastener which is the subject of U.S. Patent No. 5,304,023 as well as other self-drilling screws, pins, rivets and clinches. Appellant discloses a number of adhesives which are preferably fully cured at room temperature within 72 hours. One acceptable adhesive employed by the Appellant, as set forth on page 3, first full paragraph, is Formulation No.12059A marketed by the Advanced Adhesive Systems of Newington, Connecticut. The preferred adhesive is a two part epoxy system having substantially a 1:1 resin/hardener mix by weight or by volume which has a very high viscosity and cures at room temperature. Additionally, the adhesives may be heat activated materials such as methacrylate and urethane.

Appellant documents the superior results of the connection system with the hysteresis curves of Figure 4-7. The superior connection provided by Appellant's connection system is essentially entirely provided by the structural adhesive as opposed to the mechanical fasteners. Appellant also has provided documentation as to the superior connection provided by laboratory tests of overlapping lap joint specimens with various numbers of fasteners employed in combination with the adhesive system as illustrated in Figure 3.

VI. ISSUES (37 C.F.R. §1.192(c)(6))

- (1) Whether the Examiner properly combined Applicants Admitted Prior Art (AAPA) and Orowan U.S. Patent No. 3,655,424 (Orowan) to reject the claims.

- (2) Whether the Examiner properly combined AAPA/Orowan and U.S. Patent No. 4,426,425 (Good et al) to reject certain claims.
- (3) Whether the proposed combination of AAPA and Orowan and of AAPA, Orowan and Good et al teach or suggest all of the limitations of the claims including the feature that "the connection is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener"
- (4) Whether claims 1-24 are patentable under 35 U.S.C. §103(a) over Applicant's Admitted Prior Art (AAPA) in view of Orowan (U.S. Patent No. 3,655,424).
- (5) Whether claims 4-7 are patentable under 35 U.S.C. §103(a) over AAPA/Orowan as applied to claim 1 in further in view of Goode, et al (U.S. Patent No. 4,426,425).
- (6) Whether claims 8-15 are patentable under 35 U.S.C. §103(a) over AAPA in view of Orowan and Goode, et al.
- (7) Whether claims 18, 21 and 24 are patentable under 35 U.S.C. §103(a) over AAPA/Orowan as applied to claims 16, 19 and 22 and further in view of Goode, et al.

VII. GROUPING OF CLAIMS (37 C.F.R. §1.192(c)(7))

Claims 1-3 and 7 stand together.

Claims 4-6, 8-13, and 15 stand together.

Claims 14, 16 and 17 stand together.

Claim 18 stands apart.

Claims 19 and 20 stand together.

Claim 21 stands apart.

Claims 22 and 23 stand together.

Claim 24 stands apart.

VIII ARGUMENTS - REJECTIONS UNDER 35 U.S.C. §103(a) (37 C.F.R. §1.192 (c)(8)(iv))

A. THE EXAMINER HAS NOT PROPERLY APPLIED THE LEGAL REQUIREMENTS FOR A REJECTION UNDER 35 U.S.C. §103

In determining the differences between the prior art and the claims, the question under 35 U.S.C. §103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); Carl Schenck, A. G. v. Nortron Corp., 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983). Furthermore, "a patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the 'subject matter as a whole' which should always be considered in determining the obviousness of an invention under 35 U.S.C. 103". In re Sponnoble, 405 F.2d 578, 585, 160 USPQ 237, 243 (CCPA 1969).

The Examiner Has The Burden Of Establishing A *Prima Facie* Case Of Obviousness Within The Legal Requirements Created By The Courts.

The courts have further established the legal concepts of *prima facie* obviousness. As summarized in MPEP §2142, "the legal concept of *prima facie* obviousness is a procedural tool of examination which . . . allocates who has the burden of going forward with the production of evidence in each step of the examination process." The MPEP further states "the Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the Examiner does not produce a *prima facie* case, the Applicant is under no obligation to submit evidence of nonobviousness."

To establish a *prima facie* case of obviousness three basic criteria must be met. First, there must some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or

references when combined) must teach or suggest all the claim limitations. See MPEP §2143.

When the issue is obviousness, the Federal Circuit has recently stated:

“The need for specificity pervades this authority. See, e.g., In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) (“particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed”). In re Rouffet, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998) (“even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.”). In re Fritch, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (the Examiner can satisfy the burden of showing obviousness of the combination “only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references”).” In re Lee, 61 USPQ2d at 1433-1434.

Ample Legal Authority For Conclusion That The Examiner Has Failed To Establish A *Prima Facie* Case Of Obviousness Against Appellant’s Pending Claims.

The burden is on the Examiner to demonstrate that the prior art evidence is sufficient suggestion of the desirability of doing what the inventor has done. See MPEP §2142.). At an irreducible minimum, this burden requires the Examiner to apply the facts of the case to “present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” A showing of a suggestion, teaching or motivation to combine the prior art reference is an “essential component of an obvious holding” C.R. Bard, Inc., v. M3 Systems, Inc., 48 USPQ2d 1225, 1232 (Fed. Cir. 1998).

The Examiner has clearly not shown why a skilled artisan, with no knowledge of the claimed invention, would have arrived at the Appellant’s claimed invention.

This is improper. See, e.g., In re Lee at 1433, citing to In re Kotzab, at 1317 (Fed. Cir. 2000); See In re Dance, 160 F.3d at 1343, 48 USPQ2d at 1637 (Fed. Cir. 1998) (“there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the Applicant”).

Obviousness does not require absolute predictability, however, at least some degree of predictability is required. Evidence showing there was no reasonable expectation of success may provide a conclusion of nonobviousness. See MPEP §2143.02 citing In re Reinhart, 189 USPQ 143 (CCPA 1976). The courts have held that for obviousness under 35 U.S.C. §103, there must have been a reasonable expectation of success for the modification proposed by the examiner. In re O'Farrell, 853 F.2d 894, 903-904, 7 USPQ2d 1673, 1680-1681 (Fed. Cir. 1988). The expectation of success is not whether it would have been obvious to try a modification or combination. Gillette Co. v. S.C. Johnson & Son, Inc., 191 F.2d 720, 725, USPQ2d, 1923, 1927 (Fed. Cir. 1990).

The courts have stated the Examiner cannot discharge himself from the burden of showing all the claimed elements by simply declaring all of the elements of an invention, along with the manner of combining these elements, to be well known in the art. Ex parte Stern, 13 USPQ2d 1379, 1381 (Bd. Pat. App. & Inter. 1989).

The Examiner Has Resorted To Impermissible Hindsight To Assert That Appellant's Claims Are Obvious Over The Cited References.

35 U.S.C. §103 specifies that the obviousness of an invention is to be determined as of “the time the invention was made.” This requires the Examiner to step backward in time and into the shoes worn by the hypothetical person of ordinary skill in the art when the invention was unknown and just before it was made. See MPEP §2142. “When applying 35 U.S.C. 103, . . . the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention . . .” Hodosh v. Block Drug Co., Inc., 229 USPQ 182, 187, n5 (Fed. Cir. 1986); W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553,

220 USPQ 303, 312-13 (Fed. Cir. 1983) ("To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher."); In re Gorman, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed.Cir.1991). (It is the prior art itself, and not the applicant's achievement that must establish the obviousness of the combination. Obviousness cannot be established by hindsight combination to produce the claimed invention.)

B. CONTEXT OF APPELLANT'S CLAIMS NOT FULLY APPRECIATED BY EXAMINER.

As a predicate to consideration of the claims and the rejections, it is very apparent that there are technical subtleties with respect to the disclosed and claimed invention and with respect to the alleged prior art, which may not be readily appreciated. Appellant's invention and the art as cited by the Examiner are from wholly different eras with respect to adhesion technology and are also from wholly different technological fields. In this regard, it should be appreciated that many of the terms and descriptions employed in the cited art and Appellant's claimed invention have significantly different contexts.

A fundamental understanding of Appellant's invention derives from the field of technology wherein Appellant is joining light gauge metal members within the context of the construction trades by a novel use of adhesives which has not been heretofore achieved, and in fact, was contrary to the prevailing technology at the time of the invention. In Appellant's invention, once the joining process is completed, the principal portion of the joint load-bearing capacity (as contrasted to the cited art) is provided by the adhesive, and not the mechanical fasteners, as recited in the claim 8 representative feature so that members are joined in a connection which is significantly enhanced in load-bearing capacity to the connection provided only by the at least one fastener. The remaining independent claims 1, 16, 19 and 22 recite analogous features in relation to joined elements. Appellant has further documented this novel load-bearing feature in the

specification as well as schematically and quantitatively illustrated same in the figures of the application. The significantly enhanced load-bearing feature provided by Appellant's fastening system is documented by the hysteresis curves of Figures 4-7. When the Orowan '424 reference is properly considered as a whole, a fair inference is that the Orowan fasteners provide the most significant load-bearing factor to the analogously joined assembly. Indeed, the Orowan adhesive functions to enhance the connecting integrity of the mechanical fasteners.

Applicant's invention employs the mechanical fasteners to provide a fastening function while the adhesive is curing between the joint members as well as to provide an auxiliary mechanical lock if the joined system should ever be subjected to fire or intense heat which would potentially compromise the integrity of the adhesive bond in a structure which may typically be used for buildings and the like.

Moreover, it is highly significant and it is explicitly noted that the Orowan '424 reference represents an approach that was originally tried by Applicant, but was rejected because it could not provide the requisite load-bearing characteristics. The Orowan '424 reference is clearly concerned with an adhesive tape or adhesive film type adhesion system which Applicant originally considered, but after due testing, rejected the approach since it did not provide sufficient adhesive load-bearing capacity.

It will be appreciated that all of the pending claims of the application incorporate the feature wherein the members (of panel or structure or frame) are joined in a connection which is significantly enhanced in load-bearing capacity to a connection provided by fasteners alone.

C. THE PROPOSED COMBINATION OF AAPA AND OROWAN IS IMPROPER.

There is no proper basis for the Examiner's proposed combination of AAPA and Orowan. The rationale advanced by the Examiner is flawed.

The basis for the Examiner's final rejection of claims 1-24 under 35 U.S.C. §103(a) over Applicant's Admitted Prior Art (AAPA) in view of Orowan, U.S. Patent No. 3,655,424 (Orowan) is set forth on page 2 of the Final Action.

The Examiner states as follows:

2. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Orowan (US Patent 3,655,424).

With regards to claims 1-3, 8-10, 16, 17, 19, 20, 22 and 23, Applicant, at page 1 of the specification discloses a connection system for light-gauge steel construction and an assembly wherein numerous self-drilling screws or other fasteners are used to provide the connection between a panel and a support structure. AAPA does not disclose applying an adhesive curable at room temperature to at least the panel or the support structure and placing them against each other. However it is known to use an adhesive material between plates of a lap joint used in a connection with rivets or other fasteners as attested by Orowan, see column 1, lines 8-30 and figure 1. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used an adhesive material in the connection of AAPA, in light of the teachings of Orowan, in order to relieve the load on the fasteners to a relatively small extent and give protection against fretting between the parts joined. Applicant should note that the connection of Orowan is significantly enhanced in load-bearing capacity, see column 1, lines 24-29 in particular.

There is no teaching or suggestion whatsoever in AAPA of the use of an adhesive, nor use of a second type of connecting of any kind, nor is there any teaching or suggestion that would motivate anyone in any conceivable way to look to an adhesive or any second connecting means.

Appellant's invention was not motivated in any fashion by the mechanical integrity or load-bearing capacity of the fasteners employed in the prior art structures to which Applicant's invention relates. ***Appellant was motivated to provide a connecting system for light-gauge steel which was less labor intensive and which would accordingly be less costly to implement.*** In the prior art systems to which the invention relates, numerous mechanical fasteners, typically self-drilling screws, were required in order to provide the required load-

bearing characteristics for the structure. Adhesives as such were not employed to connect the light-gauge steel panels to the support frames.

The Examiner fully acknowledges that AAPA does not disclose applying an adhesive curable at room temperature to at least the panel or the support structure and placing them against each other. The logic used by the Examiner is wholly misplaced. The Examiner's motivation for the combination appears to be stated as follows:

However it is known to use an adhesive material between plates of a lap joint used in the connection with rivets or other fasteners is attested by Orowan (see column 1, lines 8-30 and Figure 1).

Therefore it would have been obvious to one of ordinary skill at the time the invention was made, to have used an adhesive material in the connection of AAPA in light of the teachings of Orowan in order to leave the load on the fasteners to a relatively small extent and give protection against threading between the parts joined.

Contrary to the assertions of the Examiner, there was no suggestion whatsoever in AAPA as to any problems with any need to relieve load on the mechanical fasteners, nor were there any problems with threading given the large numbers of fasteners. Accordingly, there is clearly no proper basis whatsoever for the proposed combination.

D. THE PROPOSED COMBINATION OF AAPA, OROWAN AND GOOD ET AL IS IMPROPER.

The Examiner's contention in combining AAPA/Orowan with Good et al is set forth in paragraph 3 of page of the Final Action as follows:

AAPA/Orowan discloses a connection system as shown above except for the adhesive being a two-part epoxy system comprising a resin and hardener mixed in equal portion by weight or volume wherein the adhesive fully cures within approximately 72 hours. However, Good et al teaches such adhesive, see column 2, lines 26-34 and column 3, lines 18-20. Therefore, it would have been obvious to one of ordinary skill in the art at the time when the invention was

made, to have used a two-part epoxy system as the adhesive AAPA/Orowan, in light of the teachings of Good et al in order to achieve a bond with a superior shear and strength.

First of all, nowhere in the proposed AAPA/Orowan combination is there any teaching of any epoxy system whatsoever. Moreover, Appellant is unable to find any specific teaching of a two-part epoxy system comprising a resin and hardener mixed in equal proportions by weight or volume as alleged by the Examiner. Furthermore, the Good et al reference merely mentions metal to metal in passing and nowhere suggests the structures as recited in the claims, for example, the connection of light-gauge steel panel to a second member, etc. Moreover, in the teaching of Good, the achievement of a bond with a superior shear and strength is not the superior bond in shear and strength as recited in Appellant's claims, namely, a connection which is "significantly enhanced in load-bearing capacity to connection provided only by the at least one fastener", but is merely allegedly superior in shear and strength to other epoxy systems. Accordingly, when the Examiner's contention is carefully scrutinized, there is no basis for the proposed combination, nor does the combination disclose, teach or suggest all the elements of the claims as contended by the Examiner.

E. THE PROPOSED COMBINATIONS FAIL TO DISCLOSE, TEACH OR SUGGEST EACH OF THE CLAIM FEATURES.

The Examiner states that "Applicant should note that the connection of Orowan is significantly enhanced in load-bearing capacity, see column 1, lines 24-29 in particular." (Final Action p.2). Here, the Examiner has failed to appreciate the relevant claim text because Applicant is not concerned with enhancing the load-bearing capacity as such, although it is a certainly surprising result of Applicant's invention. The relevant features of Applicant's claims which are not disclosed in the Orowan (or any other cited reference) reference, recite that the load-bearing capacity of the adhesive is such that the panel is joined to the structure in a connection which significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener. The Orowan reference is wholly silent

with respect to this claim feature. However, it is very clear that in the Orowan reference, the object is to enhance the effectiveness of the mechanical fasteners.

The Orowan reference when properly considered as a whole, unlike Applicant's object to reduce the labor and save cost in the connecting of light-gauge steel panels to frames, actually necessarily complicates the connecting process. There is no elimination of, for example, of mechanical fasteners as accomplished in Applicant's invention.

Likewise, the Examiner really sets forth no basis for a reasonable expectation of success were the references combined.

F. SPECIFIC ERRORS OF REJECTIONS FOR EACH OF CLAIMS.

CLAIMS 1-3 AND 7

Claims 1-3 and 7 recite as follows:

1. A connection system for connecting at least one light-gauge steel panel to a support structure comprising:
 - applying an adhesive to at least one of said panel or support structure, said adhesive being curable at room temperature and able to adhere to steel;
 - placing said panel against said support structure;
 - driving at least one fastener through the panel into said support structure; and
 - allowing said adhesive to cure,so that said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.
2. The connection system of claim 1 wherein the fastener is selected from the group consisting of self-drilling screws, rivets, pins, and clinches.
3. The connection system of claim 1 wherein each said fastener is a self-drilling screw.
7. The connection system of claim 1 wherein said adhesive fully cures within approximately 72 hours.

Claims 1-3 and 7 have been rejected as unpatentable under 35 U.S.C. §103(a) over AAPA in view of Orowan. The Examiner's rejection of claims 1-3 and 7 should be reversed and the claims deemed patentable because there is no proper basis for the proposed combination of AAPA and Orowan and also because the proposed combination does not disclose, teach or suggest a feature wherein "said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener".

CLAIMS 4-6, 8-13, AND 15

Claims 4-6, 8-13, and 15 recite as follows:

4. The connection system of claim 1 wherein said adhesive is a two-part epoxy system.
5. The connection system of claim 4 wherein said epoxy system comprises a resin and hardener which are mixed in substantially equal portions by weight.
6. The epoxy system of claim 4 wherein said epoxy system comprises a resin and hardener which are mixed in substantially equal portions by volume.
8. A connection system for connecting at least one light-gauge steel member to a second member comprising:
 - applying a bead of epoxy to at least one of said members, said epoxy being curable at room temperature and able to adhere to steel;
 - positioning said members in adjacent relationship with said epoxy disposed between said members;
 - driving at least one fastener through one member into said other member; and
 - allowing said epoxy to cure,so that said members are joined in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.
9. The connection system of claim 8 wherein the fastener is selected from the group consisting of self-drilling screws, rivets, pins, and clinches.

10. The connection system of claim 8 wherein each said fastener is a self-drilling screw.

11. The connection system of claim 8 wherein said epoxy comprises a resin and hardener which are mixed in substantially equal portions by weight.

12. The connection system of claim 8 wherein said epoxy comprises a resin and hardener which are mixed in substantially equal portions by volume.

13. The connection system of claim 8 wherein said adhesive fully cures within approximately 72 hours.

15. The connection system of claim 1 wherein said adhesive is composed of a material selected from the group consisting of epoxy, methacrylate and urethane.

Claim 4-6, 8-13 and 15 have been rejected as being unpatentable under 35 U.S.C. §103(a) over AAPA/Orowan as applied to claim 1 and further in view of Good et al, U.S. Patent No. 4,426,425 (Good et al). In addition to the reasons advanced for the patentability of claims 1-3 and 7, these claims are also patentable for the reason that there is no proper basis for combining the AAPA/Orowan reference with the Good et al reference.

CLAIMS 14, 16 AND 17

Claims 14, 16 and 17 recite as follows:

14. The connection system of claim 8 wherein a bead of epoxy is applied to both members.

16. A connection system for connecting at least one light-gauge steel panel to a steel frame comprising:

applying a bead of adhesive to at least one of said panel or frame, said adhesive being curable at room temperature and able to adhere to steel;

positioning said panel against said frame with said adhesive disposed between said panel and frame;

driving at least one fastener through said panel into said frame;

and

allowing said adhesive to cure,

so that said panel is joined to said frame in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.

17. The connection system of claim 16 wherein the fastener selected from the group consisting of self-drilling screws, rivets, pins, and clinches.

Claims 14, 16 and 17 have been rejected by the Examiner as being unpatentable over AAPA in view of Orowan and Good et al. This rejection should be reversed and the claims be deemed allowable for the reason that there is no proper basis for the proposed combination, and further, the proposed combination fails to disclose the feature wherein "said panel is joined to said frame in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener".

CLAIM 18

Claim 18 recites as follows:

18. The connection system of claim 16 wherein the adhesive is selected from the group consisting of epoxy, methacrylate, and urethane.

Claim 18 has been rejected by the Examiner as being unpatentable over AAPA/Orowan as applied to claim 16 and further in view of Good et al. This rejection should be reversed for the reasons previously advanced with respect to claim 16. Further, there is no disclosure or teaching of methacrylate or urethane.

CLAIMS 19 AND 20

Claims 19 and 20 recite as follows:

19. An assembly comprising:
a support structure;
a panel of light-gauge steel mounted to said support structure;
a structural adhesive curable at room temperature and disposed between said support structure and said panel;
at least one fastener driven through said panel into said support structure,

so that said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener.

20. The assembly of claim 19, wherein each said fastener is selected from the group consisting of self drilling screws, rivets, pins and clinches.

Claims 19 and 20 have been rejected as being unpatentable under 35 U.S.C. §103(a) over AAPA in view of Orowan. This rejection should be reversed and the claims be deemed allowable for the reason that there is no proper basis for the proposed combination, and for the reason that none of the references disclose, teach or suggest the feature wherein "said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener".

CLAIM 21

Claim 21 recites as follows:

21. The assembly of claim 19, wherein said adhesive is a two part epoxy system.

Claim 21 has been rejected as being unpatentable under 35 U.S.C. §103(a) over AAPA/Orowan as applied to claim 19 and further in view of Good et al. This rejection should be reversed and the claim be deemed allowable for the reasons advanced for claim 19 and also for the reason that there is no proper basis for the combination proposed by the Examiner.

CLAIMS 22 AND 23

Claims 22 and 23 recite as follows:

22. An assembly comprising:
a metal support frame;
a panel of light-gauge steel mounted to said support frame;
a structural adhesive curable at room temperature disposed between said support frame and said panel;
a plurality of fasteners driven through said panel into said support frame,

so that said panel is joined to said support structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener.

23. The assembly of claim 22, wherein the fasteners are selected from the group consisting of self-drilling screws, rivets, pins and clinches.

Claims 22 and 23 have been rejected over AAPA in view of Orowan. This rejection should be reversed and the claims be deemed patentable for the reason that there is no proper basis for the proposed combination and the proposed combination fails to disclose, teach or suggest wherein "said panel is joined to said support structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener".

CLAIM 24

Claim 24 recites as follows:

24. The assembly of claim 22, wherein said adhesive is a two part epoxy system.

Claim 24 has been rejected as being unpatentable under 35 U.S.C. §103(a) over AAPA/Orowan as applied to claim 22 and further in view of Good et al. This rejection should be reversed and the claim be deemed allowable for the reason that there is no proper basis for the proposed combination of AAPA/Orowan with Good et al and further, there is no proper basis for the feature wherein "said panel is joined to said support structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener".

IX. CONCLUSION

There is no proper basis for the Examiner's proposed combination of AAPA and Orowan. There is further no proper basis for the Examiner's proposed combination of AAPA/Orowan and Good et al. Even if the proposed combinations were proper, none of the references individually or in combination properly disclose,

teach or suggest all of the features of each of the claims. Accordingly, the rejection under 35 U.S.C. §103(b) of claims 1-24 should be reversed and the claims deemed patentable.

Respectfully Submitted,

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GDY/tlc

IX. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL

1. A connection system for connecting at least one light-gauge steel panel to a support structure comprising:

applying an adhesive to at least one of said panel or support structure, said adhesive being curable at room temperature and able to adhere to steel;

placing said panel against said support structure;

driving at least one fastener through the panel into said support structure;

and

allowing said adhesive to cure,

so that said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.

2. The connection system of claim 1 wherein the fastener is selected from the group consisting of self-drilling screws, rivets, pins, and clinches.

3. The connection system of claim 1 wherein each said fastener is a self-drilling screw.

4. The connection system of claim 1 wherein said adhesive is a two-part epoxy system.

5. The connection system of claim 4 wherein said epoxy system comprises a resin and hardener which are mixed in substantially equal portions by weight.

6. The epoxy system of claim 4 wherein said epoxy system comprises a resin and hardener which are mixed in substantially equal portions by volume.

7. The connection system of claim 1 wherein said adhesive fully cures within approximately 72 hours.

8. A connection system for connecting at least one light-gauge steel member to a second member comprising:

applying a bead of epoxy to at least one of said members, said epoxy being curable at room temperature and able to adhere to steel;

positioning said members in adjacent relationship with said epoxy disposed between said members;

driving at least one fastener through one member into said other member; and

allowing said epoxy to cure,

so that said members are joined in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.

9. The connection system of claim 8 wherein the fastener is selected from the group consisting of self-drilling screws, rivets, pins, and clinches.

10. The connection system of claim 8 wherein each said fastener is a self-drilling screw.

11. The connection system of claim 8 wherein said epoxy comprises a resin and hardener which are mixed in substantially equal portions by weight.

12. The connection system of claim 8 wherein said epoxy comprises a resin and hardener which are mixed in substantially equal portions by volume.

13. The connection system of claim 8 wherein said adhesive fully cures within approximately 72 hours.

14. The connection system of claim 8 wherein a bead of epoxy is applied to both members.

15. The connection system of claim 1 wherein said adhesive is composed of a material selected from the group consisting of epoxy, methacrylate and urethane.

16. A connection system for connecting at least one light-gauge steel panel to a steel frame comprising:

applying a bead of adhesive to at least one of said panel or frame, said adhesive being curable at room temperature and able to adhere to steel;

positioning said panel against said frame with said adhesive disposed between said panel and frame;

driving at least one fastener through said panel into said frame; and

allowing said adhesive to cure,

so that said panel is joined to said frame in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.

17. The connection system of claim 16 wherein the fastener selected from the group consisting of self-drilling screws, rivets, pins, and clinches.

18. The connection system of claim 16 wherein the adhesive is selected from the group consisting of epoxy, methacrylate, and urethane.

19. An assembly comprising: a support structure;

a panel of light-gauge steel mounted to said support structure;

a structural adhesive curable at room temperature and disposed between said support structure and said panel;

at least one fastener driven through said panel into said support structure,

so that said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener.

20. The assembly of claim 19, wherein each said fastener is selected from the group consisting of self drilling screws, rivets, pins and clinches.

21. The assembly of claim 19, wherein said adhesive is a two part epoxy system.

22. An assembly comprising: a metal support frame;
a panel of light-gauge steel mounted to said support frame;
a structural adhesive curable at room temperature disposed between said support frame and said panel;
a plurality of fasteners driven through said panel into said support frame,
so that said panel is joined to said support structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener.

23. The assembly of claim 22, wherein the fasteners are selected from the group consisting of self-drilling screws, rivets, pins and clinches.

24. The assembly of claim 22, wherein said adhesive is a two part epoxy system.

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